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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/919,360	07/30/2001	Leroy E. Hood	P-IS 4627	2535

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EXAMINER	
ZHOU, SHUBO	
ART UNIT	**PAPER NUMBER**
1631	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/919,360	HOOD ET AL.	
	Examiner	Art Unit	
	Shubo (Joe) Zhou	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4,8-16,44,46,48-54,57-64 and 66-73* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,8-16,44,46,48-54,57-64 and 66-73* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/24/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

RCE

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 1/24/07 has been entered.

Amendments

Applicant's amendments filed 10/31/06 are acknowledged and the amendments to the claims are entered. The amendment to the specification, however, is not found to completely comply with 37 CFR 1.121 because the replacement (i.e. substitute) title of the previous title does not have markings to show changes made.

Claims 1-2, 4, 8-16, 44, 46, 48-54, 57-64, and 66-73 are currently pending and under examination.

Information Disclosure Statement

The Information Disclosure Statement filed 1/24/07 has been entered and considered. Initialed copy of the form PTO-1449 is enclosed with this action.

Priority

It is noted that the current filing receipt for the instant application includes a foreign priority claim to German application number 10057589.7, filed 11/21/2000. However, the

current image file of the application does not contain a paper claiming priority from said foreign application. Nor is there a certified copy of the priority document in the image file of the application. Furthermore, the foreign priority claim does not appear in the Oath/Declaration filed 1/28/2002. If applicant has never claimed such a foreign priority, the Office should be so informed so that the error in the filing receipt would be corrected. If applicant believes a paper claiming such foreign priority was filed, the Office should be informed of the date when the paper was filed, a copy of the paper, and related supporting evidence of the filing, e.g. the returned postcard by the Office.

This note was reiterated from the previous Office action mailed 10/4/06. Applicant appears to be acquiescent in the responses filed thereafter.

Specification

The specification is objected to because of the following including informalities:

The specification is objected to because of the following reasons:

It appears that trademark is used in this application, such as WINDOWS on page 132. It should be capitalized wherever it appears and be accompanied by the generic terminology. Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

The title of the invention is not descriptive. The elected invention is drawn to a method of classifying a population by drug responsiveness. The current title, however, is directed to

"multiparameter analysis for drug response and related methods." A new title is required that is clearly indicative of the invention to which the elected claims are directed.

Note that the above objections are reiterated from the previous Office action mailed 10/4/06 in light of the fact that the amendments to the specification filed 10/31/06 have not been entered as they are not in compliance with 37 CFR 1.121. Furthermore, even in the amendment to the specification, certain trademarks such as WINDOW is still not capitalized. Applicant is requested to review the entire specification to ensure all trademarks are capitalized as appropriate.

Appropriate correction is required.

Claim Rejections-35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-2, 4, 8-16, 44, 46, 48-54, 57-64, and 66-73 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

At least one embodiment of the claimed invention is drawn to a computer process comprising (a) creating a multidimensional space of n dimensions, wherein n represents the number of different molecules being analyzed in a specimen from each individual in a population of individuals administered a drug and wherein said multidimensional space contains n axes, each of said axes relating to the expression level of a molecule of said n molecules, wherein n is 3 or more molecules; (b) determining a multidimensional coordinate point for each individual, wherein said multidimensional coordinate point is representative of the expression levels of said n molecules; and (c) determining a drug response-associated reference expression region of a

group of individuals in said population Using said multidimensional coordinate points, thereby classifying said group of individuals into a drug response reference population.

Since the claims involve judicial exceptions such as algorithmic calculations, the following analysis of facts of this particular patent application follows the rationale suggested in the "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (OG Notices: 22 November 2005, available from the US PTO website at http://www.uspto.gov/web/offices/com/sol/og/2005/week47/og200547.htm).

The Guidelines states:

> *To satisfy section 101 requirements, the claim must be for a practical application of the § 101 judicial exception, which can be identified in various ways (Guidelines, p. 19):*
>
> *- The claimed invention "transforms" an article or physical object to a different state or thing.*
> *- The claimed invention otherwise produces a useful, concrete and tangible result, based on the factors discussed below.*

In the instant case, at least one embodiment of the claimed invention merely manipulates data and performs a series of calculations. Thus, the process does not seem to transform an article or physical object to a different state or thing outside a computation device.

Furthermore, the invention does not produce a useful, concrete and tangible result. Specifically it does not produce a tangible result. Since the process merely manipulates data and performs a series of without actually using or making available for use the results of the manipulation to enable its functionality and usefulness to be realized.

Claim Rejections-35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it

pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-2, 4, 8-16, 44, 46, 48-54, 57-64, and 66-73 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a Written Description rejection.

The claims are drawn to encompass methods for classifying a population by drug responsiveness, comprising: (a) determining a multidimensional coordinate point representative of the expression levels of a sample of molecules in a specimen from individuals in a population of individuals administered a drug; and (b) determining a drug response-associated reference expression region of a group of individuals in said population using said multidimensional coordinate points, thereby classifying said group of individuals into a drug response reference population, wherein the molecules whose expression levels are to be determined can be any molecules in the sample including small molecules.

Thus, the claims are drawn to a large genus.

With regard to written description inquiry, *Vas-Cath Inc. V. Mahurkar*, 19 USPQ2d 1111, clearly states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the 'written description' inquiry, whatever is now claimed". Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. 112 is severable from its enablement provision. In *The Regents of the University of California v. Eli Lilly* (43 USPQ2d 1398-1412), the court held that a generic statement which defines a genus of nucleic acids by only their functional activity does not provide an adequate written description of the genus. The court indicated that while Applicants are not required to disclose every species encompassed by a genus, the description of a genus is achieved by the recitation of a

representative number of DNA molecules, usually defined by a nucleotide sequence, falling within the scope of the claimed genus. At section B(1), the court states that "An adequate written description of a DNA...'requires a precise definition, such as by structure, formula, chemical name, or physical properties', not a mere wish or plan for obtaining the claimed chemical invention".

Hence, in analyzing whether or not the written description requirement is met for a genus claim, it is first determined whether a representative number of species have been described by their complete structure. In the instant case, the specification describes determining expression levels of molecules such as nucleic acids and polypeptides. See pages 14-15, etc. The molecules encompassed in the claims include any molecules in the cell including, as the specification stated, small molecules comprising "a modification of a sugar, including glucose or modifications thereof such as glucose 1-phosphate, glucose 6-phosphate, glucose 1,6-diphosphate, glucuronic acid, glucosaine, N-acetylglucoseamine, and the like. Other exemplary small molecules include other sugars and carbohydrates, including lactose, maltose, galactose, fructose, and xylose, derivatives thereof, and metabolites thereof such as lactate and pyruvate; salts, ions, atoms and metals such as sodium, potassium, chloride, calcium, bicarbonate/CO.sub.2, chromium, iron, magnesium, manganese, phosphate, molybdenum, selenium, zinc, copper, cobolt, fluoride, nickel, vanadium, silicon, arsenic, boron and the like; amino acids; lipids, including cholesterol, triglyceride and fatty acids; neurotransmitters and metabolites thereof such as acetylcholine, dopamine, norepinephrine, epinephrine, serotonin, gamma-aminobutyrate, metanephrine, normetanephrine, vanillylmandelic acid, 3-methoxy-4-hydroxyphenylglycol, homovanillic acid, 5-hydroxyindoleacetic acid. The small molecules can be intermediates or products of metabolic or synthetic pathways." See pages 16-17. However, the specification never describe how the expression profiles of all these small molecules including all types of ions and even atoms, how the expression levels of these small molecules including

atoms can be used to classify a population by drug responsiveness by creating a multidimensional space for the expression of these small molecules including atoms and determining a drug response-associated reference expression region of a group of individuals, etc. It would be readily apparent to one skilled in the art that the expression levels of all these diverse molecules including atoms are immensely different in cells and their response to a drug, if any, would vary considerably. Thus, description of molecules of nucleic acids and polypeptides is not considered to be representative number of species of the broadly claimed genus.

For these reasons, it is determined that applicants have not provided sufficient descriptions in the disclosure that they were in possession, at the time of filing, of the invention as it is broadly claimed and thus the written description requirement has not been satisfied for the claims as they are broadly written. Applicants' attention is also drawn to the Guidelines for the Examination of Patent Applications under 35 U.S.C. 112, ¶ 1 'Written Description" Requirement, Federal Register, Vol. 66, No. 4, pages 1099-1111, Friday January 5, 2001.

The following is a quotation of the **second** paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-2, 4, 8-16, 44, 46, 48-54, 57-64, and 66-73 are rejected under 35 U.S.C. 112 , second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 in step (b) recites "said multidimensional coordinate point is representative of the expression levels of said n molecules." The metes and bounds of the claimed invention are not clear because it is unclear how the singular "point" can be representative of the plural

"expression levels" of the n molecules. Does the point represent the combined amount of the levels?

The phrase "said multidimensional coordinate points" recited in step (c) of claim 1 lacks clear antecedent basis. There is no prior reference to a plural "multidimensional coordinate points" but only the singular "multidimensional coordinate point." It is not clear what are the plural "points:" Does it mean each individual has multiple points, each of which represents a molecule, and thus multiple "points" are for multiple molecules in one individual, or does it mean that each individual has one point representing all the "expression levels" of all the molecules and thus the multiple "points" representing multiple individuals in the group of individuals in the population?

All claims that are dependent from claim 1 are rejected as comprising the same indefinite limitations.

Independent claim 16 and its dependent claims are rejected for the same reasons as those set forth for claim 1 above.

Clarification of the metes and bounds of the claims is requested.

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shubo (Joe) Zhou, whose telephone number is 571-272-0724. The examiner can normally be reached Monday-Friday from 8 A.M. to 4 P.M. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla, Ph.D., can be reached on 571-272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public. For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

sz/SZ

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PATENT EXAMINER